

Remarks

These Remarks are in reply to the Office Action mailed March 25, 2004.

Claims 1-28 were pending in the Application prior to the outstanding Office Action. In the Office Action, the Examiner rejected claims 1-28. Reconsideration of the rejections is requested.

I. Claims Rejected Under 35 U.S.C. § 103(a)

The Examiner rejects claims 1-4, 8, 12-13, 16-21, 23-25, and 27-28 under 35 U.S.C. § 103(a) as being obvious over Mukhopadhyay et al. ("Passive Capture and Structuring of Lectures," 10/1999, ACM Multimedia '99, pages 1-11; hereinafter, *Mukhopadhyay*) in view of Mitchell et al. (U.S. Patent No. 5,964,966; hereinafter, *Mitchell*). Applicants respectfully traverse these rejections.

The Examiner's obligation in making a *prima facie* case of obviousness requires the Examiner to show that the prior art alone or in combination teaches or suggests all elements of the claimed invention. Applicants respectfully submit that the Examiner has failed to set forth a *prima facie* case of obviousness.

Claim 1 recites a method for linking a scanned document to a video, comprising the steps of: obtaining a scanned document having margins; removing the margins from the scanned document; scaling the scanned document; transforming the scanned document into a scanned document identifier; obtaining a video file having a plurality of video frames; transforming the plurality of video frames into a plurality of respective video frame identifiers; comparing the scanned document identifier with the plurality of video frame identifiers; and linking the scanned document to a first video frame in the plurality of video frames.

As the Examiner notes, *Mukhopadhyay* (p.2, right column) teaches that slides are synchronized with the video. *Mukhopadhyay* (p. 3, left column) further teaches an algorithm that matches the slides to the video. Thus, *Mukhopadhyay* teaches a system where a slide region and a video region are running simultaneously on a user interface. These are completely different teachings from that of Claim 1, which teaches linking a document to a video through the series of steps listed in the previous paragraph. The limitations of linking a scanned document to a video as outlined in Claim 1 are not taught or suggested by *Mukhopadhyay* and *Mitchell*, either alone or in combination.

As the Examiner further comments, *Mukhopadhyay* (p.10, left column) teaches inserting the digitized output of scan converters when demonstrations are given. Inserting digitized output of scan converters when demonstrations are given does not teach or suggest linking a document to a video through obtaining a scanned document having margins; removing the margins from the scanned document; scaling the scanned document; transforming the scanned document into a scanned document identifier; obtaining a video file having a plurality of video frames; transforming the plurality of video frames into a plurality of respective video frame identifiers;

comparing the scanned document identifier with the plurality of video frame identifiers; and linking the scanned document to a first video frame in the plurality of video frames. In fact, *Mukhopadhyay* (p.9, right column) discloses inserting the digitized output of scan converters when demonstrations are given as one of several "avenues" being explored by the authors to improve the quality of the editing decisions. Therefore *Mukhopadhyay* does not teach or suggest linking a document to a video.

The Examiner characterizes *Mukhopadhyay* (p. 5, see figure 7) as disclosing that "each slide image are set with a value to match with each video frame." *Mukhopadhyay* (p. 5, left and right columns) discloses scene cut detection algorithms which are used to match a representative video frame from each segment in a set of time values T with one of the slides in a set of n slide images S . *Mukhopadhyay* discloses a system where a slide region and a video region are running simultaneously on a user interface. Applicants, by contrast, disclose linking a document to a *discrete* video through the set of steps listed above. *Mukhopadhyay* thus does not teach or suggest transforming the scanned document into a scanned document identifier.

The Examiner characterizes *Mukhopadhyay* (page 5) as teaching "a video sequence of a plurality of segments." *Mukhopadhyay* (page 5) teaches that slides are synchronized with one of the videos by determining which slide appears in each frame of the video captured by the overview camera. *Mukhopadhyay* (page 5) further teaches a segmentation step in which given a video sequence $v(t)$, a set of time values $T = \{t_0, t_1, \dots, t_k\}$ are computed such that the projected slide image does not change in v during the interval t_i to t_{i+1} . Thus *Mukhopadhyay* teaches a sequence of video *segments*, each segment comprising a plurality of video frames. Applicants, by contrast, teach the step of obtaining a video *file* having a plurality of video frames. *Mukhopadhyay* does not teach or suggest this limitation.

Mukhopadhyay (page 5) teaches matching a representative video frame from each segment in a set of time values T with one of the slides in a set of n slide images S . The step taught by *Mukhopadhyay* of *matching* a representative video frame with a *slide* is quite different from the Applicants' claimed step of *transforming* the plurality of video frames into a plurality of respective video frame *identifiers*. *Mukhopadhyay* does not teach or suggest this limitation.

The Examiner characterizes *Mukhopadhyay* (page 5, see figure 7) as teaching "computing a video sequence of $v(t)$ segments or frames to match against every slide image S ." *Mukhopadhyay* (page 5) teaches that *given* (not computing) a video sequence $v(t)$, we can compute a set of time values T . *Mukhopadhyay* (page 5, see figure 7) further teaches computing a function g by matching a representative frame from each segment in T to one of the slides in S . It should be noted that *Mukhopadhyay* teaches completely distinct roles and definitions for a video *frame* and a video *segment*. Applicants respectfully note that the conflation, interchangeability, and/or equivalence of video segments and video frames suggested by the Examiner is inconsistent with the

teaching of *Mukhopadhyay*.

It should be noted that for purposes of greater definiteness, we adjusted the reference in step d of claim 1, which previously described "transforming the scanned document into a scanned document identifier" to refer to "transforming the scanned document of step c into a scanned document identifier."

Regarding independent claims 1, 17 and 21, the Examiner characterizes *Mukhopadhyay* (page 5, see figure 7) as teaching "matching slides in each frame to synchronize video data to the slides." However, the teaching of *Mukhopadhyay* to *match* a representative frame from each segment in T to one of the *slides* in S is quite different from claim 1's limitation of *linking* a scanned *document* to a first video frame in the plurality of video frames. Matching a representative frame to a slide, as *Mukhopadhyay* teaches, can in no way be said to teach or suggest linking a first video frame to a scanned document. Similarly, regarding independent Claim 17, the teaching of *Mukhopadhyay* to *match* a representative frame from each segment in T to one of the *slides* in S is quite different from Claim 17's limitation of *linking* a scanned *document file* to a segment of a video file. Finally, regarding independent Claim 21, the teaching of *Mukhopadhyay* to *match* a representative frame from each segment in T to one of the *slides* in S is quite different from Claim 17's limitation of *linking* a scanned *document* to a segment of a video file. *Matching* video data and *slides* involves entirely distinct principles and techniques from *linking* video files or video frames to scanned *documents* or scanned *document files*. *Mukhopadhyay* cannot teach or suggest these limitations of independent Claims 1, 17, and 21.

Regarding independent Claims 1, 17, and 21, Applicants respectfully traverse the Examiner's suggestion that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have modified Mitchell et al. (U.S. Patent No. 5,963,966; hereinafter, *Mitchell*) into *Mukhopadhyay* to provide a way to scan document pages into images in order to provide a low-cost and high-performance solution for converting paper into a form that can be accessed through the network such as the Internet or a media such as a disk or CD-ROM.

Regarding independent Claim 1, *Mitchell* does not teach the limitation of transforming the scanned document into a scanned document identifier. Certainly the direct (or for that matter, indirect) *translation* of a paper document into a hypertext-based or other electronic *format* such as SGML, HTML, and text, is completely different from the limitation in Claim 1 of *transforming* a scanned document into a scanned document *identifier* in the course of linking the scanned document to a video. *Mukhopadhyay* and *Mitchell*, alone or in combination, do not teach or suggest this limitation.

With respect to dependent claims 5-6, 9-10, and 22, the Examiner finds that "[i]t would have been obvious to a person of ordinary skill in the art at the time the invention was made to have modified Kumar (U.S. Patent No. 5,835,129; hereinafter, *Kumar*) into *Mukhopadhyay* and *Mitchell* to provide the transformation of an

image using DCT defined by the orthonormal basis, as taught by *Kumar*, incorporated into the images of *Mukhopadhyay* and *Mitchell*, in order to facilitate the division of image frames into blocks." Applicants respectfully traverse this finding. *Kumar* (col. 8, line 60-col. 9, line 3) discloses "separating the image frame into blocks that are eight pixels wide by eight pixels deep, and then computing the Inverse Discrete Cosine Transform (DCT⁻¹) for each block." Thus, as is common in image compression, the orthonormal transform is performed on small blocks of the document. By contrast, Claims 5-6, 9-10, and 22 teach orthonormal transforms which are performed at once on the *entire* scanned document. Thus *Mukhopadhyay*, *Mitchell*, and *Kumar*, either alone or in combination, do not teach these limitations of Claims 5-6, 9-10, and 22.

With respect to dependent claims 7 and 11, the Examiner finds that "[i]t would have been obvious to a person of ordinary skill in the art at the time the invention was made to have modified *Mitchell* into *Mukhopadhyay* to provide a way to scan document pages into images, as taught by *Mitchell*, incorporated into the slide image of *Mukhopadhyay* and image of *Kumar*, in order to provide a low-cost and high performance solution for converting paper into a form that can be accessed through the network such as the Internet or a media such as a disk or CD-ROM." Applicants respectfully traverse this finding. *Mitchell* (col. 8, lines 36-43) discloses cropping to remove the borders and then rescaling. Claims 7 and 11, by contrast, include the limitation of "removing the least significant information." Removing the least significant information cannot be equated with removing borders. Documents including but not limited to such examples as forms, templates, and maps may contain most or all of their significant information near or on the borders. Thus *Mukhopadhyay*, *Mitchell*, and *Kumar*, either alone or in combination, do not teach or suggest these limitations of Claims 7 and 11.

Claims 2-16 depend from independent claim 1. As such, rejected dependent claims 2-16 are patentable for at least the reasons given in connection with claim 1. Claims 18-20 depend from independent claim 17. As such, rejected dependent claims 18-20 are patentable for at least the reasons given in connection with claim 17. Claims 22-28 depend from independent claim 21. As such, rejected dependent claims 22-28 are patentable for at least the reasons given in connection with claim 21.

II. Conclusion

In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowable, and a Notice of Allowance is requested. The Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of a patent.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

Date:

6/3/04

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